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EXAMINER	
LAO, LUN S	
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/670,899	BAUMHAUER ET AL.	
	Examiner	Art Unit	
	LUN-SEE LAO	2614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *05-26-2009*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-6, 9, 10,13, 14, 17,18 and 21-23* is/are rejected.

7)☒ Claim(s) *7,8,11,12,15,16,19 and 20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

Introduction

1. This communication is responsive to the remarks filed on 05-26-2009. Claims 2 and 24-25 have been cancelled. Claims 1 and 3-23 are pending.

Specification

2. The amendment filed 11-28-2007 is objected to under 35 U.S.C. 132(a) because it introduces new matter into the disclosure. 35 U.S.C. 132(a) states that no amendment shall introduce new matter into the disclosure of the invention. The added material which is not supported by the original disclosure is as follows: The " With microphone elements 22 and 24 comprising two omnidirectional elements, signal flow processor 20 further uses a 'balancing' scheme that is known to those skilled in the art. The balancing scheme is run in the idle state to effectively match the electroacoustic sensitivities of the two omnidirectional elements. As a result of this balancing scheme, the two omnidirectional elements produce like input signals for processing in signal flow processor 20. <u>In other words, the elements take on substantially equal complex sensitivities (in amplitude and phase) thus allowing signal flow processor 20 to apply</u> ~~which is essential prior to the application of~~ transfer functions τ and Gm1 This balancing scheme utilizes, <u>in the idle state</u>, the ever present, <u>far field</u> diffuse room noise as its acoustic input and employs a long averaging time. The balancing is constantly updated in the idle state, but should not change substantially over years of service".

Applicant is required to cancel the new matter in the reply to this Office Action.

Claim Rejections - 35 USC § 112

3. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

4. Claims 1 and 13 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claim 1 recited "the signal flow processor provides an electrical time delay only to the first microphone element, such that the first microphone element's output undergoes <u>a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element</u>, and provides a compatible amplitude gain only to the second microphone element, <u>such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element</u>, and wherein the signal flow processor <u>only</u> subtracts the outputs of the first and second microphone elements to create a null that reduces external acoustic coupling". The specification does not support the high lining limitation in the specification nor in any claim originary and in any figures presented.

Claim 13 is essentially similar to claim 1 and is rejected for the same reason stated above apropos to claim 1.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claims 1, 3-4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough(US PAT. 4,672,674).

Consider claim 1 as base on 112 first paragraph problem state above, Clough teaches that a microphone system for communication devices comprising:

a. a first microphone element (see fig.1 (1));

b. a second microphone element (2) positioned near the first microphone element (1); and

c. a signal flow processor electrically connected to the first and second microphone elements(7);

wherein the signal flow processor(7) provides an electrical time delay(10) only to the first microphone element (1), such that the first microphone element's output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2), and provides a compatible amplitude gain (reads on the weighting circuit, 11 and see col. 4 line 33-col. 4 line 68)

only to the second microphone element (2), such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2), and wherein the signal flow processor only subtracts (12 and see col. 8 lines 12-17) the outputs of the first and second microphone elements(1, 2) to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic coupling (see col. 3 line 7-col. 4 line 68); but Clough does not explicitly teach an omnidirectional microphone. Since, Clough does not limit what kinds the microphone will be used only.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Clough by implementing a particular microphone as claimed base on designer's preference and needs for the purpose of acquiring the desired audio sound quality from audio picks at various directions in the acoustical environment.

Consider claim 3 Clough teaches the microphone system (see fig.1) of a first input sound port inherently (because the microphones needs a sound port to pick the sound) leads into the first microphone element (1) and a second input sound port leads into the second microphone element (2).

Consider claim 4 Clough teaches that the first and second input sound ports (see fig.1 (1, 2)) each comprise a sound input port, but Clough does not explicitly teach that the first and second input sound ports each comprise a sound input port of a mobile phone.

However, it is well known in the art (official notice is taken) that the first and second input sound ports each comprise a sound input port of a mobile phone.

Therefore, it would have obvious that the microphone array system as taught by Clough could have used a mobile phone comprising the first and second input sound ports as claimed to provide a communication system to the user.

Consider claim 13 as base on 112 first paragraph problem state above, Clough teaches a method for producing a null towards an acoustical driver of a communication device for reducing external acoustic coupling in the communication device, the method comprising the steps of (see figs 1-2);

a providing a microphone system for telecommunications having (see col. 1 line 57-col. 2 line 8)

(i) a first omnidirectional microphone element having a first output (see fig. 1 (1)); and

(ii) a second omnidirectional microphone element positioned near the first microphone element, the second microphone element having a second output (2);

(iii) a signal flow processor (7) electrically connected to the first and the second microphone elements (1,2); .

utilizing the signal flow processor (7) to provide an electrical time delay (10) only to the first output, such that the first output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2);

utilizing the signal flow processor (7) to provide an amplitude gain (reads on the weighting circuit, 11 and see col. 4 line 33-col. 4 line 68) only to the second output (2), such that the second output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2); and

utilizing the signal flow process (7) to only subtract (12 and see col. 8 lines 12-17) the first output from the second output to create a null (reads on cancel the noise) that reduces external acoustic coupling(see col. 3 line 7-col. 4 line 68); but Clough does not explicitly an omnidirectional microphone. Since, Clough does not limit what kinds the microphone will be used only.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Clough by implementing a particular microphone as claimed base on designer's preference and needs for the purpose of acquiring the desired audio sound quality from audio picks at various directions in the acoustical environment.

7. Claims 5, 9, 14 and 17-18, 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Clough (US PAT. 4,672,674) in view of Vartiainen (US PAT. 6,275,592).

Consider claim 5 Clough does not explicitly teach the microphone system of the mobile phone comprises a receiver positioned and located closer to the first input sound port than the second input sound port.

However, Vartiainen teaches the microphone system of the mobile phone comprises a receiver positioned (see fig.7 (73)) and located closer to the first input sound port (75) than the second input sound port (72 and see col. 7 line 12-45).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Vartiainen and Clough to provide a sound source (such as a speaker) so that the user can hear the audio sound.

Consider claim 9 Clough does not explicitly teach that the microphone system of the first and second input sound ports each comprise an input sound port of a speakerphone, wherein the speakerphone comprises a loudspeaker with its center located and positioned closer to the first input sound port than the second input sound port.

However, Vartiainen teaches that the microphone system of the first and second input sound ports (see fig.7 (75,72)) each comprise an input sound port of a speakerphone, wherein the speakerphone comprises a loudspeaker (73 (earphone)) with its center located and positioned closer to the first input sound port (72) than the second input sound port (72 and see col. 7 line 12-45).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Vartiainen and Clough to provide a sound source (such as a speaker) so that the user can hear the audio sound.

Consider 14 Clough does not explicitly teach that the method further comprises the step of providing a mobile phone having a first input sound port leading into the first microphone element, a second input sound port leading into the second microphone element, and wherein the acoustical driver comprises a receiver positioned and located closer to the first input sound port than the second input sound port.

However Vartiainen teaches that the method further comprises the step of providing a mobile phone (see fig.7) having a first input sound port leading into the first microphone element (72), a second input sound port leading into the second microphone element (75), and wherein the acoustical driver (73) comprises a receiver positioned and located closer to the first input sound port (75) than the second input sound port (72 and see col. 7 line 12-45).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Vartiainen and Clough to provide a sound source (such as a speaker) so that the user can hear the audio sound.

Consider claim 18 it is essentially similar to claim 14 and is rejected for the reason stated above apropos to claim 14.

Consider claims 17 and 21 Vartianinen teaches that the method further comprises the step of calculating the electrical time delay (see fig.3 and see col. 5 line 29-50) and compatible amplitude gain by driving the receiver with an electrical impulse and measuring the impulse response at both the locations of the first and second microphone element outputs (see fig.7 (75,72) and see col. 7 line 12-67).

Consider claims 22-23 Vartianinen teaches that the electric time delay and compatible amplitude gain are each equal to a constant value with a finite number of discrete sub-bands across the communications band (see fig.3 and see col. 5 line 29-50).

8. Claims 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Clough(US PAT. 4,672,674) as modified by Vartiainen (US PAT. 6,275,592) as applied to claims 1, 2-5, 9 and 13, and further in view of Sasaki (US PAT. 5,471,538 hereinafter Sasaki).

Consider claim 6 Clough and Vartiainen do not explicitly teach that the signal flow processor makes the amplitude gain equal to unity and the time delay is selected from a range between 0 and a value equal to d2/c, wherein the variable "d2" equals the distance between the first and second sound ports and the variable "c" equals approximately the speed of sound.

However, Sasaki teaches that the signal flow processor makes the amplitude gain equal to unity and the time delay is selected from a range between 0 and a value equal to d2/c, wherein the variable "d2" equals the distance between the first and second sound ports and the variable "c" equals approximately the speed of sound (see figs 7-9 and see col. 6 line 28-col. 7 line 67).

Therefore, it would have obvious to one of ordinary skill in the art the time the invention was made to combine the teaching of Sasaki to the teaching of Clough and Vartiainen to more accurate calculating time delay with amplitude gain control for the output signals.

Consider claim 10 it is essentially similar to claim 6 and is rejected for the reason stated above apropos to claim 6.

9. Claims 1, 3-4 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Karakasoglu et al.(US PAT. 5,797,852).

Consider claim 1 as base on 112 first paragraph problem state above, Karakasoglu teaches that 1 microphone system for communication devices comprising(see figs 3,4):

a. a first microphone element (see fig.4 (37));

b. a second microphone element (56) positioned near the first microphone element (37); and

c. a signal flow processor (81 reads on DSP)electrically connected to the first and second microphone elements(37, 56 and see col.4 lines 32-47);

wherein the signal flow processor(81) provides an electrical time delay(84) only to the first microphone element (37), such that the first microphone element's output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56), and provides a compatible amplitude gain (82, reads on, the weighting circuit ,ω_0 , ω_1 ω_2 and see col. 5 line 1-17) only to the second microphone element (56), such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone

element (56), and wherein the signal flow processor only subtracts (83) the outputs of the first and second microphone elements(37,56) to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic coupling (see col. 4 line 7-col. 5 line 67); but Karakasoglu does not explicitly an omnidirectional microphone. Since, Karakasoglu does not limit what kinds the microphone will be used only.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Karakasoglu by implementing a particular microphone as claimed base on designer's preference and needs for the purpose of acquiring the desired audio sound quality from audio picks at various directions in the acoustical environment.

Consider claim 3 Karakasoglu teaches the microphone system (see fig.4) of a first input sound port inherently (because the microphones needs a sound port to pick the sound) leads into the first microphone element (37) and a second input sound port leads into the second microphone element (56).

Consider claim 4 Karakasoglu teaches that the first and second input sound ports (see fig.1 (1, 2)) each comprise a sound input port, but Karakasoglu does not explicitly teach that the first and second input sound ports each comprise a sound input port of a mobile phone.

However, it is well known in the art (official notice is taken) that the first and second input sound ports each comprise a sound input port of a mobile phone.

Therefore, it would have obvious that the microphone array system as taught by

Karakasoglu could have used a mobile phone comprising the first and second input sound ports as claimed to provide a communication system to the user.

Consider claim 13 as base on 112 first paragraph problem state above, Karakasoglu teaches a method for producing a null towards an acoustical driver of a communication device for reducing external acoustic coupling in the communication device, the method comprising the steps of (see figs 3-5);

(i) a first omnidirectional microphone element having a first output (see fig. 4 (37)); and

(ii) a second omnidirectional microphone(56) element positioned near the first microphone element(37), the second microphone element having a second output (2);

(iii) a signal flow processor (81) electrically connected to the first and the second microphone elements (37, 56 and see col.4 lines 32-47);

utilizing the signal flow processor (81) to provide an electrical time delay (84) only to the first output(37), such that the first output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56);

utilizing the signal flow processor (81) to provide an amplitude gain (82, reads on, the weighting circuit, ω_0 , $\omega_{1,}$ ω_2 and see col. 5 line 1-17) only to the second output (56), such that the second output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the

wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56); and

utilizing the signal flow process (81) to only subtract (83) the first output from the second output to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic coupling(see col. 4 line 7-col. 5 line 67); but Karakasoglu does not explicitly an omnidirectional microphone and providing a microphone system for telecommunications.

Since, Karakasoglu does not limit what kinds the microphone and what kind system will be used only.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Karakasoglu by implementing a particular microphone and providing a microphone system for telecommunications as claimed base on designer's preference and needs for the purpose of acquiring the desired audio sound quality from audio picks at various directions in the acoustical environment and the market demand.

Allowable Subject Matter

10. Claims 7-8, 11-12 and 15-16, 19-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Amendment

11. Applicant's arguments filed 05-26-2009 have been fully considered but they are not persuasive.

Applicant argued that the Objections to Amended Specification filed with the November 28, 2007 amendment (see the remarks page 3-page 5 last paragraph) was not proper.

The examiner disagrees. The examiner can not find any support in the cited area (line 23 on page 8 and line 1 on page 9 of the specification) as indicated by the applicant for the added content such as " As a result of this balancing scheme, the two omnidirectional elements produce like input signals for processing in signal flow processor 20~~, which is essential prior to the application~~. In other words, the elements take on substantially equal complex sensitivities (in amplitude and phase) thus allowing signal flow processor 20 to apply transfer z and Gml."

The examiner also can not find any support from applicant's original disclosure describing the added content such as " the two omnidirectional elements produce like input signals for processing in signal flow processor 20. <u>In other words, the elements take on substantially equal complex sensitivities (in amplitude and phase) thus allowing signal flow processor 20 to apply</u> ~~which is essential prior to the application of~~ transfer functions τ and Gm1 This balancing scheme utilizes, <u>in the idle state</u>, the ever present, <u>far field</u> diffuse room noise as its acoustic input and employs a long averaging time". Therefore, the objection maintained.

Applicant argued claim Rejections Under § 112 (see the remarks page 6 second paragraph-page 7 last paragraph).

The examiner disagrees. The examiner can not find any support in the cited area as indicated by the applicant such as "when phone 30 is in either the receive state or in the double talk state, signal flow processor 20 utilizes the digital signal processor to provide an advantageous electrical time delay ('c) to microphone element 22 and a compatible and advantageous amplitude gain (Gml) to microphone element 24." (p. 7, lines 14-17) (pp. 11-13, Figs. 2-3)" which the applicant points out (see the remarks page 7, 2nd paragraph). However, the examiner find neither specification describing "<u>a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element</u>, and provides a compatible amplitude gain only to the second microphone element, <u>such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element</u>, and wherein the signal flow processor <u>only</u> subtracts the outputs of the first and second microphone elements to create a null that reduces external acoustic coupling" nor in any claim originary and in any figures presented for high lining limitation. Therefore, the 112 first paragraph rejection maintained.

Applicant further argued that the rejections of claims 1-6, 9-10, 13-14, 17-18 as being obvious Under 35 U.S.C. §103(a)(see the remarks pages 8 and 9).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by

combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988)and *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, Since, Clough does not limit what kinds the microphone will be used only.

Therefore, it would have been obvious to one of the ordinary skill in the art at the time the invention was made to modify the invention of Clough by implementing a particular microphone as claimed base on designer's preference and needs for the purpose of acquiring the desired audio sound quality from audio picks at various directions in the acoustical environment.

Applicant argued that Clough does not disclose the creation of "a null that reduces external acoustic coupling"(see the remarks page 9).

The examiner disagrees that. The examiner responds that as base on 112 first paragraph problem state above, Clough discloses a signal flow processor electrically connected to the first and second microphone elements(7); wherein the signal flow processor(7) provides an electrical time delay(10) only to the first microphone element (1), such that the first microphone element's output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2), and provides a compatible amplitude gain (reads on the weighting circuit, 11 and see col. 4 line 33-col. 4 line 68) only to the

second microphone element (2), such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2), and wherein the signal flow processor only subtracts (12 and see col. 8 lines 12-17) the outputs of the first and second microphone elements(1, 2) to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic coupling (see col. 3 line 7-col. 4 line 68).

Applicant further argued that Clough does not disclose “the application of an electronic delay or an compatible amplitude gain that is calculated based on the coupling acoustical traveling wave"(see the remarks page 9, last paragraph).

The examiner responds that the argument “an electronic delay or an compatible amplitude gain that is calculated based on the coupling acoustical traveling wave” is not claimed, and thus moot.

Applicant further argued that Clough fails to disclose a microphone system or a method that creates "a null that reduces external acoustic coupling", as claimed in claims 1 and 13. As discussed in this response, the Applicants define the term "null" to mean a "dead spot/dead region with respect to audio waves received at a certain angle from the receiver of the communication device" "(see the remarks page 9, last paragraph).

The examiner responds that the argument “Applicants define the term "null" to mean a "dead spot/dead region with respect to audio waves received at a certain angle from the

receiver of the communication device" is not claimed, and thus moot. On the other , application only discloses that “In other words, the subtraction of the two processed microphone elements results in a unitary microphone system having a null or dead spot/dead region with respect to audio waves received at a certain angle from the receiver of the communication device (see application page 8 line 6-12).

Applicant further argued that Cohen does not disclose a microphone system or a method of producing a null that has a signal flow processor that: (i) applies to the output of the second microphone element an "amplitude gain.., such that the second.., output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element" and (2) applies to the first microphone element "an electrical time delay.., such that the first . . . output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element", as claimed in claims 1 and 13(see the remarks page 11, second paragraph).

The examiner responds that as base on 112 first paragraph problem state above, Clough discloses a signal flow processor electrically connected to the first and second microphone elements(7); wherein the signal flow processor(7) provides an electrical time delay(10) only to the first microphone element (1), such that the first microphone element's output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first

microphone element (1) and subsequently arrives at the second microphone element (2), and provides a compatible amplitude gain (reads on the weighting circuit, 11 and see col. 4 line 33-col. 4 line 68) only to the second microphone element (2), such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (1) and subsequently arrives at the second microphone element (2), and wherein the signal flow processor only subtracts (12 and see col. 8 lines 12-17) the outputs of the first and second microphone elements(1, 2) to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic coupling (see col. 3 line 7-col. 4 line 68). It meets the limitation as recited in claim 1 and 13.

Applicant argued that Karakasoglu does not disclose, teach or suggest the creation of "a null that reduces external acoustic coupling"(see the remarks page 13 last paragraph- 14 page).

The examiner disagrees that. The examiner responds that as base on 112 first paragraph problem state above, Karakasoglu discloses that the signal flow processor(81) provides an electrical time delay(84) only to the first microphone element (37), such that the first microphone element's output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56), and provides a compatible amplitude gain (82, reads on, the weighting circuit ,ω_0 , ω_1 ω_2 and see col. 5

line 1-17) only to the second microphone element (56), such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56), and wherein the signal flow processor only subtracts (83) the outputs of the first and second microphone elements(37,56) to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic coupling (see col. 4 line 7-col. 5 line 67).

Applicant further argued that Karakasoglu fails to disclose that creates "a null that reduces external acoustic coupling", and the applicants define the term "null" to mean a "dead spot/dead region with respect to audio waves received at a certain angle from the receiver of the communication device" (see the remarks page 14, last paragraph).

The examiner responds that the argument “Applicants define the term "null" to mean a "dead spot/dead region with respect to audio waves received at a certain angle from the receiver of the communication device" is not claimed, and thus moot. On the other , application only discloses that “In other words, the subtraction of the two processed microphone elements results in a unitary microphone system having a null or dead spot/dead region with respect to audio waves received at a certain angle from the receiver of the communication device (see application page 8 line 6-12).

Applicant further argued that Karakasoglu does not disclose an electrical time delay only to the first microphone element "such that the first.., output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes

between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element" and applying a compatible amplitude gain only to the second microphone element "such that the second . . . output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element and subsequently arrives at the second microphone element", as claimed in claims 1 and 13 (see the remarks page 15, second paragraph).

The examiner responds that as base on 112 first paragraph problem state above Karakasoglu discloses that the signal flow processor(81) provides an electrical time delay(84) only to the first microphone element (37), such that the first microphone element's output undergoes a phase change substantially equal to that which a coupling acoustical traveling wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56), and provides a compatible amplitude gain (82, reads on, the weighting circuit ,ω_0 , ω_1 ω_2 and see col. 5 line 1-17) only to the second microphone element (56), such that the second microphone's output undergoes an amplitude gain substantially equal in magnitude to the amplitude attenuation which the wave undergoes between the time the wave arrives at the first microphone element (37) and subsequently arrives at the second microphone element (56), and wherein the signal flow processor only subtracts (83) the outputs of the first and second microphone elements(37,56) to create a null (to cancel the noise reads on to create a null, limitation) that reduces external acoustic

coupling (see col. 4 line 7-col. 5 line 67). It meets the limitation as recited in claim 1 and 13.

Applicant further argued that Karakasoglu does not disclose an electrical time delay only to the first microphone element

The examiner responds that as base on 112 first paragraph problem stated above Karakasoglu discloses that the signal flow processor(81) provides an electrical time delay(84) only to the first microphone element (37); but the electrical time delay(84) does not provide to the second microphone element (56)(see fig.3 and see col. 4 line 7-col. 5 line 67). It meets the limitation as recited in claims 1, 13.

Conclusion

12 **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

13. The prior art made of record and not relied upon is considered to applicant's disclosure. Miller.II (US PAT. 5,029,215) is recited to show other related microphone system for communication devices.

14. Any response to this action should be mailed to:

Mail Stop ____(explanation, e.g., Amendment or After-final, etc.)

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Facsimile responses should be faxed to:
(571) 273-8300

Hand-delivered responses should be brought to:
Customer Service Window
Randolph Building
401 Dulany Street
Alexandria, VA 22314

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lao,Lun-See whose telephone number is (571) 272-7501 The examiner can normally be reached on Monday-Friday from 8:00 to 5:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Vivian Chin, can be reached on (571) 272-7848.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Technology Center 2600 whose telephone number is (571) 272-2600.

Lao,Lun-See
/LUN-SEE LAO/
Examiner, Art Unit 2614
Patent Examiner
US Patent and Trademark Office
Knox
571-272-7501
Date 09-17-2009

/Vivian Chin/
Supervisory Patent Examiner, Art Unit 2614